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ADVANCED SPACECRAFT PROPULSION

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Performance constraints of conventional chemical propulsion systems limit world space activities in the defense, commercial and exploration sectors. More often it is being recognized that advanced spacecraft propulsion technologies are the key to achieving space objectives in a fast, efficient and inexpensive fashion, As a result, spacecraft propulsion research expenditures have increased and man y new propulsion research and space flight test initiatives have begun.

Goals and achievements of ongoing propulsion research arc summarized in this paper. Ncw propulsion concepts and research arc described, The schedule for advanced spacecraft propulsion space flight tests and experiments is presented along with the plans for incorporate ion of advanced propulsion technology into future space missions and commercial ventures.

Advanced spacecraft propulsion research considered includes, electric, metastable chemical, light sail, nuclear fission and fusion, solar thermal and beamed energy, and antimatter propulsion concepts. Concepts arc discussed in the framework of applications which include drag make-up, orbit transfer, orbit maintenance, geosynchronous satellite longitude change, lunar and planetary transfer and orbit insertion, and very deep space ant] interstellar exploration.